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REMARKS

Applicants note the withdrawal of the finality of the previous Office Action in view of the request for continued examination filed on February 21, 2003.

In the first office action, claims 1-6, 15, 22-30, 37-42, 45-49, 73-79, and 100-105 were rejected under 35 U.S.C. 102(e) as being anticipated by Kunitomo et al., U.S. Patent No. 6,235,572. While applicants previously pointed out that one would have to be motivated to pick and choose ruthenium oxide as the lower electrode, the Examiner has taken the position that 35 U.S.C. 102 "merely requires that the reference fully disclose each and every limitation". That is an incorrect interpretation of the law. Otherwise, a dictionary would always be an anticipatory reference because each and every word in a claim can be found there. More properly, for a single reference to anticipate requires disclosure of all elements of a claimed invention arranged as in that claim. *Panduit Corp. v. Dennison Mfg. Co.*, 227 USPQ 337, 350 (Fed. Cir. 1985). Kunitomo et al. do not anticipate the claimed invention.

Moreover, the Examiner has not carried her burden of demonstrating suggestion or motivation to pick and choose among the various embodiments of Kunitomo et al. to arrive at the claimed invention. In order to meet applicants' claims, one would have to choose ruthenium oxide as the lower electrode and then oxidize the lower electrode and the oxide dielectric layer together under oxidizing conditions. Kunitomo et al. do not teach this. Rather, Kunitomo et al. teach that the lower electrodes 54 are formed from a reaction protect layer 53 and a ruthenium (oxide) film 51 (both of which require selection of ruthenium oxide), and further teach that the reaction protect layer 53 prevents oxygen from entering "during a heat treatment in an oxidation atmosphere." See col. 18, lines 22-27. Thus, Kunitomo et al. fail to teach or suggest the claimed invention.

In response to applicants' arguments, the Examiner has now asserted that the protect layer 53 is formed on the conductive plugs and functions "to prevent oxidation of the layers below the plug, not the lower electrode." However, applicants could find no

such teaching in Kunitomo et al. Rather, Kunitomo et al. teach that where the reaction protect layer 53 is formed of a ruthenium oxide layer, oxygen does not pass through the tantalum oxide film 55 or the lower electrodes 54 to reach plugs 49. See col. 21, lines 35-39 and Fig. 21. While the Examiner continues to refer to col. 18, lines 46-62 as teaching that the tantalum oxide film "and consequently the lower electrode" is subjected to a heat treatment in an oxidation atmosphere, there is no teaching in Kunitomo et al. that the lower electrode is oxidized with the oxide dielectric material as claimed. Rather, as pointed out above, Kunitomo et al. clearly teach that the reaction protect layer 53 prevents oxygen from entering during a heat treatment in an oxidation atmosphere. The Examiner has pointed to no teaching in Kunitomo et al. that suggests that the lower electrodes are oxidized with the tantalum oxide film *when the lower electrodes comprise ruthenium oxide*.

Accordingly, Kunitomo et al. do not meet the claimed subject matter as they do not teach oxidation of both the conductive oxide electrode and first layer of oxide dielectric material, nor do they teach that the conductive oxide electrode is provided with enough oxygen so as to be stable with the oxide dielectric layer. Claims 1-6, 15, 22-30, 37-42, 45-49, 74-76 and 100-105 are clearly patentable over Kunitomo et al.

Claims 8-12, 43-44, 50, and 57-61 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kunitomo et al. in view of Joo, U.S. Patent No. 5,879,957. The Examiner asserts that Kunitomo et al. disclose a ruthenium oxide upper electrode, and that one would have been motivated to form such an upper electrode by oxidizing an electrode of ruthenium as taught by Joo. However, the fact that one *could* oxidize the upper electrode of Kunitomo et al. does not make it obvious to do so. *In re Gordon*, 221 USPQ 1125, 1227 (Fed.Cir. 1984) ("The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.") Joo teaches that the ruthenium oxide layer may be formed by any of a reactive sputtering method, a thermal oxidation method, or a plasma oxidation method. There is nothing in Joo which teaches that a plasma oxidation

method is preferred, nor is there any teaching or suggestion in Joo of carrying out such oxidation at the claimed temperature range of 250° to 500°C. As Joo is silent as to the temperature range, there is no motivation to use plasma oxidation in order to "avoid a heat treatment at high temperature" as suggested by the Examiner.

Further, even if one were to oxidize the upper electrode of Kunitomo et al., the claims would not be met as neither Kunitomo et al. nor Joo teach oxidizing a conductive oxide electrode and a first layer of high dielectric constant oxide dielectric material as recited in independent claims 8, 11, and 50. Nor do the references teach or suggest depositing a gas permeable electrode on the upper layer electrode and oxidizing the upper layer electrode through the gas permeable electrode as recited in claim 11.

Claims 11-12 and 62-63 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kunitomo et al. and Joo in view of Kingon et al. The Examiner acknowledges that neither Kunitomo nor Joo et al. teach a method of forming a gas permeable (platinum) electrode on an upper layer electrode as claimed, but asserts that it would have been obvious to do so in view of Kingon et al., who teach a top electrode which may comprise a hybrid electrode structure such as $Pt/RuO_2$. As previously pointed out, there is no teaching or suggestion in Kingon et al. of forming a gas permeable (Pt) electrode **on** an upper electrode as claimed. Nor is there any teaching or suggestion in Kingon et al. of depositing a gas permeable electrode on an upper layer electrode and then oxidizing the upper layer electrode as recited in independent claim 11 and dependent claims 12 and 62-63.

Further, neither Kunitomo et al., Joo, nor Kingon et al. teach or suggest oxidizing a conductive oxide electrode and a first layer of high dielectric constant oxide dielectric material as recited in independent claim 11 and independent claim 50, from which claims 62-63 depend.

For all of the above reasons, applicants submit that claims 1-6, 8-12, 15, 22-30, 37-50, 57-63, 74-76 and 100-105 are patentable over the cited art of record. Early notification of allowable subject matter is respectfully solicited.

Respectfully submitted,

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